



**CALIFORNIA STATE SCIENCE FAIR  
2015 PROJECT SUMMARY**

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<b>Project Title</b> <b>Cooking Smart, Scientifically</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective of this experiment is to compare the rates of heat conduction of commonly available metals. My hypothesis is that copper will conduct heat faster than iron, aluminum, brass, mild steel, and stainless steel.</p> <p><b>Methods/Materials</b> To conduct my experiment, I used 12 inches long, 1/8 inch diameter metal rods of copper, iron, aluminum, brass, mild steel and stainless steel. I attached these rods to a holder by making holes in it. Then I melted wax and used it to attach colored push-pins along the length of the each metal rod at 1 inch intervals. I used different color push-pins for each metal to help differentiate them during my experiment. Once all the rods were ready with push-pins in place, I placed one end of the each rod on a hot skillet. I started the timer as soon as the rods touched the skillet. Then I recorded the time as each push-pin fell. The test was considered complete when no push-pin fell for 10 consecutive minutes. I repeated the experiment 3 times. I recorded my data for each experiment in logbook and converted the time to seconds.</p> <p><b>Results</b> The results showed that copper was the fastest conductor, followed by aluminum, then brass, mild steel, iron. Stainless steel was the slowest conductor. I also observed that heat conduction was slower farther away from the heat source.</p> <p><b>Conclusions/Discussion</b> The experimental results showed that copper was the best conductor. My hypothesis was correct. My experiment has applications that can be useful in our daily lives. Based on results, for faster time saving cooking and to save non-renewable heat energy, cooking utensils should be made of copper and aluminum. But since copper has some health issues, we should coat it the pan with teflon. The handles should be made of stainless steel since it takes longer to heat up. Also, as heat loss will be less in stainless steel, serving utensils should be made of this material to keep food warmer for longer periods. If I were to do this experiment again, I would use more metals and compare different diameters of the same metals, and different shapes of the metal rods.</p>	
<b>Summary Statement</b> My project is testing heat conduction rates of different types of metals.	
<b>Help Received</b> My parents helped in getting the materials and supervised my experiment while I used hot materials.	